

REMARKS

Claims 1 to 5 are all the claims pending in the application, prior to the present Amendment.

Claims 1 and 3-5 have been rejected under 35 U.S.C. § 103(a) as obvious over JP 07-331025 to Maeda.

The Examiner states at page 3 of the Office Action that the recitations of claim 2 are not disclosed by JP '025 and that claim 2 is allowable over JP '025.

Accordingly, applicants have amended claim 1 by directing it to the allowed recitations of claim 2 and have canceled claims 2 and 3.

In view of this amendment, applicants submit that claims 1, 4 and 5 are patentable over JP '025 and, accordingly, request withdrawal of this rejection.

Claims 1-5 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent Application Publication 2003/0092819 to Miyatake et al.

As discussed above, applicants have canceled claims 2 and 3, and have directed claim 1 to the recitations of canceled claim 2. Thus, claims 1, 4 and 5 are the claims that remain and are subject to this rejection.

Applicants submit that Miyatake et al do not disclose or render obvious the subject matter of claims 1, 4 and 5 as amended above and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 1 as amended above is directed to a rubber-modified styrene resin composition comprising 99.9 to 97 percent by weight of a rubber-

modified styrene resin (E) and 0.1 to 3 percent by weight of a polyorganosiloxane-containing graft copolymer (D).

The polyorganosiloxane-containing graft copolymer (D) is a copolymer (a-1). The copolymer (a-1) is prepared with a polyorganosiloxane (A) produced by polymerizing 99.9 to 99.6 percent by weight of an organosiloxane with 0.1 to 0.4 percent by weight of a graft-linking agent.

The copolymer (a-1) is prepared by polymerizing 0.01 to 5 parts by weight of a monomer (B) comprising 100 to 50 percent by weight of a polyfunctional monomer (b-1) having at least two polymerizable unsaturated bonds in its molecule and 0 to 50 percent by weight of another copolymerizable monomer (b-2) in the presence of 86 to 94.99 parts by weight of the polyorganosiloxane (A), and then polymerizing the resulting polymer with 5 to 13.99 parts by weight of a vinyl monomer (C), wherein the sum of the compounds (A), (B), and (C) is 100 parts by weight.

Miyatake et al disclose, in paragraph [0011], a rubber modified resin obtained by polymerizing a vinyl monomer in the presence of (A) a silicone rubber latex and (B) an acrylic rubber latex.

Miyatake et al contain the following disclosures in paragraphs [0015], [0083] and [0084]:

[0015] The rubber-modified resins of the present invention are those prepared by polymerizing a vinyl monomer in the presence of a mixed rubber latex of (A) a silicone rubber latex and (B) an acrylic rubber latex and, during the polymerization, coagglomerating polymer particles in the

latex to enhance the particle size. That is to say, the rubber-modified resins comprise particles formed by particle size-enhancing co-agglomeration, which is conducted in the course of the graft polymerization, of graft copolymer particles wherein a vinyl monomer is graft-polymerized onto a silicone rubber (or particles wherein the silicone rubber and a polymer of the vinyl monomer are physically coexist if the silicone rubber has no grafting site) and graft copolymer particles wherein the vinyl monomer is graft-polymerized onto an acrylic rubber (or particles wherein the acrylic rubber and the vinyl polymer are physically coexist if the acrylic rubber has no grafting site).

[0083] The thus obtained rubber-modified resin (in the state of powder or latex) is incorporated into various thermoplastic resins to give thermoplastic resin compositions having an improved impact resistance.

[0084] Examples of the thermoplastic resin are, for instance, polyvinyl chloride, chlorinated polyvinyl chloride, polystyrene, styrene - acrylonitrile copolymer, styrene- acrylonitrile-N-phenylmaleimide copolymer, α -methylstyrene-acrylonitrile copolymer, polymethyl methacrylate, methyl methacrylate-styrene copolymer, polycarbonate, polyamide, a polyester such as polyethylene terephthalate, polybutylene terephthalate or 1,4-cyclohexanedimethanol-modified polyethylene terephthalate, butadiene rubber-styrene copolymer (HIPS resin),

acrylonitrile-butadiene rubber-styrene copolymer (ABS resin), acrylonitrile-acrylic rubber-styrene copolymer (AAS resin), acrylonitrile-ethylenepropylene rubber-styrene copolymer (AES resin), polyphenylene ether, and the like. These may be used alone or in admixture thereof. Examples of a combination of at least two resins are a mixed resin of 5 to 95% by weight of polycarbonate and 5 to 95% by weight of HIPS resin, ABS resin, AAS resin or AES resin (total thereof 100% by weight), and a mixed resin of 5 to 95% by weight of polycarbonate and 5 to 95% by weight of polyethylene terephthalate or polybutylene terephthalate (total thereof 100% by weight).

The present application has the following description at page 13, lines 5-22:

The resulting polyorganosiloxane-containing graft copolymer (D) is blended with the rubber-modified styrene resin (E) to provide a resin composition having excellent impact resistance.

The rubber-modified styrene resins (E) include, for example, high-impact polystyrene (HIPS), an ABS resin composed of a styrene-butadiene-acrylonitrile copolymer, a heat-resistant ABS resin in which α -methylstyrene or maleimide partially or substantially substitutes for styrene in the ABS resin, and a (heat-resistant) AES resin or (heat-resistant) AAS resin, in which an ethylene-propylene rubber or poly(butyl acrylate) substitutes for the butadiene in the ABS resin. These rubber-

modified styrene resins may be used alone or in combination. A combination of the rubber-modified styrene resin (E) and at least one, for example, polycarbonate, polyamide, poly(butylene terephthalate), and poly(ethylene terephthalate) may also be used.

A comparison between the above descriptions of Miyatake et al and the present specification leads one to the conclusion that the polyorganosiloxane-containing graft copolymer (D) recited in the present claims corresponds to the rubber modified resin of Miyatake et al.

In the Office Action, the Examiner states that:

It is the position of the Examiner that the ABS “thermoplastic” of Miyatake corresponds to applicants’ component “E” while Miyatake’s “A” corresponds to applicants’ “A.” The acrylic rubber of Miyatake does not appear to correspond to any of the claimed components although the open language of the claims [does] not actually exclude the acrylic rubber latex.

In response to this statement, applicants have amended claim 1 to recite the term “consisting essentially of.”

Further, from this statement, applicants conclude that the Examiner’s position corresponds to the following interpretation of Miyatake et al, which is based on the premise that the Miyatake et al acrylic rubber latex (B) does not have its counterpart in the present claims, and which applicants have previously referred to as Case 2 assumptions, and that the Case 1 assumptions that applicants previously referred to are not appropriate.

- (i) Miyatake et al’s rubber modified resin corresponds to component (D) that is, it is a polyorganosiloxane-containing graft copolymer of the present claims,

- (ii) Miyatake et al's acrylic rubber latex (B) does not have its counterpart in the present claims, and
- (iii) Miyatake et al's silicone rubber latex (A) corresponds to component (A) of the present claims, that is, it is a polyorganosiloxane of the present claims.

Further, Miyatake et al disclose, for example, in claims 6 and 7, that Miyatake et al's rubber modified resin may be mixed into a thermoplastic resin such as ABS which is a typical "rubber-modified styrene resin," recited as component (E) in the present claims.

As can be seen from the above, a comparison between the polyorganosiloxane-containing graft copolymer (D) recited in the present claim and the rubber modified resin of Miyatake et al is essentially important. Applicants emphasize that the graft bases on which the graft component is grafted is different in the present invention and Miyatake et al. In particular, the graft base of the polyorganosiloxane-containing graft copolymer (D) recited in the present claim 1 consists essentially of silicone rubber (86 to 94.99 parts of polyorganosiloxane (A)), whereas the graft base of the rubber modified resin of Miyatake et al is an acrylic and silicone combined rubber.

As discussed above, Miyatake et al disclose, in paragraph [0011], a rubber modified resin obtained by polymerizing a vinyl monomer in the presence of (A) a silicone rubber latex and (B) an acrylic rubber latex.

Example 1 of Miyatake et al contains the silicone rubber latex (A) in an amount of 11.9%, the acrylic rubber latex in an amount of 73.1%, and methyl methacrylate in an amount of 15%. This 11.9% amount is far lower than the amount of polyorganosiloxane (A) employed in

component (D) of the present claims, wherein component (D) is copolymer (a-1) of the present claims. Thus, the 11.9% amount of (A) in Example 1 of Miyatake et al is far lower than the 86 parts as the lower limit of the polyorganosiloxane (A) in copolymer (a-1) of the present claims.

Examples 5 and 6 of Miyatake et al disclose that the silicone rubber latex (A) was used in an amount of 18%, the acrylic rubber latex in an amount of 72%, and methyl methacrylate in an amount of 10%. This 18% amount also is far lower than the 86 parts as the lower limit of the polyorganosiloxane (A) for copolymer (a-1) of the present claims.

Applicants submit that in view of these Examples of Miyatake et al, one of ordinary skill in the art would not be led to the 86 to 94.99 parts by weight range of the polyorganosiloxane (A) of the present claims for copolymer (a-1).

Thus, Miyatake et al do not disclose or suggest a range of 86 to 94.99 parts by weight of the polyorganosiloxane (A) of the present claims for copolymer (a-1).

Moreover, in the present application, in order to increase both the graft-linking density and graft-initiating density, which are usually low for silicone rubber graft base, the polyorganosiloxane (A) is designed to be covered with the polymer of a monomer (B), of which the main component is a polyfunctional monomer (b-1) having at least two polymerizable unsaturated bonds, as explicitly recited in the presently amended claim 1. Such characteristics are not disclosed or suggested in Miyatake et al.

In conclusion, Miyatake et al do not disclose or suggest not only the range of 86 to 94.99 parts by weight of the polyorganosiloxane (A), but also do not disclose or suggest polymerizing 0.01 to 5 parts by weight of a monomer (B) comprising 100 to 50 percent by weight of a

polyfunctional monomer (b-1) having at least two polymerizable unsaturated bonds in its molecule and 0 to 50 percent by weight of another copolymerizable monomer (b-2), and polymerizing the resulting polymer with 5 to 13.99 parts by weight of a vinyl monomer (C), wherein the sum of the compounds (A), (B), and (C) is 100 parts by weight.

In view of the above, applicants submit that Miyatake et al do not disclose or render obvious the subject matter of claims 1, 4 and 5 and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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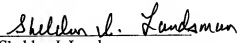
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